



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue application of :
Kinam Park et al. :
U.S. Serial No: 10/807,227 : Art Unit: 1711
Filed: March 22, 2004 : Examiner: John M. Cooney
For: HYDROGEL COMPOSITES AND :
SUPERPOROUS HYDROGEL COMPOSITES :
HAVING FAST SWELLING, HIGH : Confirmation No: 1689
MECHANICAL STRENGTH, AND :
SUPERABSORBENT PROPERTIES :

DECLARATIONS UNDER 37 CFR 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

We, Kinam Park, Jun Chen and Haesun Park hereby declare the following:

1. We are the co-inventors of claims 1-40 in the above-identified patent application.
2. We did conceive and reduce to practice the claimed invention prior to May 7, 1997. The application directed to this invention was filed on May 13, 1997.
3. In support of our Declarations we refer to the attached Statement of Dr. James H. Meadows, which establishes that the instant invention disclosure was sent by Federal Express to the predecessor law firm, Lowe,

Price, LeBlanc & Becker, on December 16, 1996, as is evidenced by a facsimile letter signed by Dr. Kinam Park, to which is applied a "Received" date stamp of December 16, 1996.

4. The Statement of Dr. Meadows also provides a copy of a letter from him addressed to Dr. Kinam Park dated May 2, 1997, which forwards a final draft of the application for review.
5. The aforementioned documents prove that the present invention was conceived and reduced to practice well before May 7, 1997.

We further declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

7/11/06
Date

Date

7/11/06
Date

Kinam Park
Kinam Park

Jun Chen

Haesun Park
Haesun Park



DOCKET NO: 368-011C

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue application of :
Kinam Park et al. :
:
U.S. Serial No: 10/807,227 : Art Unit: 1711
:
Filed: March 22, 2004 : Examiner: John M. Cooney
:
For: HYDROGEL COMPOSITES AND :
SUPERPOROUS HYDROGEL COMPOSITES :
HAVING FAST SWELLING, HIGH : Confirmation No: 1689
MECHANICAL STRENGTH, AND :
SUPERABSORBENT PROPERTIES :

DECLARATIONS UNDER 37 CFR 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

We, Kinam Park, Jun Chen and Haesun Park hereby declare the following:

1. We are the co-inventors of claims 1-40 in the above-identified patent application.
2. We did conceive and reduce to practice the claimed invention prior to May 7, 1997. The application directed to this invention was filed on May 13, 1997.
3. In support of our Declarations we refer to the attached Statement of Dr. James H. Meadows, which establishes that the instant invention disclosure was sent by Federal Express to the predecessor law firm, Lowe,

U.S. Serial No. 10/936,613

Price, LeBlanc & Becker, on December 16, 1996, as is evidenced by a facsimile letter signed by Dr. Kinam Park, to which is applied a "Received" date stamp of December 16, 1996.

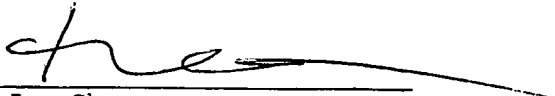
4. The Statement of Dr. Meadows also provides a copy of a letter from him addressed to Dr. Kinam Park dated May 2, 1997, which forwards a final draft of the application for review.
5. The aforementioned documents prove that the present invention was conceived and reduced to practice well before May 7, 1997.

We further declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date

July 12, 2006
Date

Kinam Park



Jun Chen

Date

Haesun Park

DOCKET NO: 368-011C



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue application of :
Kinam Park et al. :
U.S. Serial No: 10/807,227 : Art Unit: 1711
Filed: March 22, 2004 : Examiner: John M. Cooney
For: HYDROGEL COMPOSITES AND :
SUPERPOROUS HYDROGEL COMPOSITES :
HAVING FAST SWELLING, HIGH : Confirmation No: 1689
MECHANICAL STRENGTH, AND :
SUPERABSORBENT PROPERTIES :

STATEMENT OF JAMES H. MEADOWS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, James H. Meadows, am the attorney representing applicants in the above-identified patent application. I hereby state the following:

1. The instant invention disclosure was sent by Federal Express to the predecessor law firm, Lowe, Price, LeBlanc & Becker, on December 16, 1996, as is evidenced by a facsimile letter signed by Dr. Kinam Park, to which is applied a "Received" date stamp of December 16, 1996.
2. A final draft of the application was sent by me to Dr. Kinam Park for review on May 2, 1997.

3. Copies of the aforementioned documents are forwarded herewith.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

6/27/06
Date

J H Meadows
James H. Meadows, Ph.D.

Attachments



PURDUE UNIVERSITY

School of Pharmacy, West Lafayette, IN 47907-1336

Kinam Park, Ph.D.
Professor of Pharmaceutics

Tel: (317) 494-7759
Fax: (317) 496-1903
E-mail: esp@omni.cc.purdue.edu

RECEIVED

December 16, 1996

Mr. Robert L. Price
Law Offices
Lowe, Price, Leblanc & Becker
Suite 300
99 Canal Center Plaza
Alexandria, VA 22314

DEC 16 1996

RECEIVED VIA FACSIMILE

Tel: 703-684-1111
Fax: 703-684-1124 (or 1145)

Re: Disclosure on "Synthesis of superporous hydrogel composites with fast swelling, high mechanical strength, and superabsorbent properties" by Kinam Park, Jun Chen, and Haesun Park

Dear Mr. Price:

I sent the above mentioned disclosure to you by Federal Express. Please fax me a note upon your receipt.

Thank you very much for your help and look forward to working with you.

With best regards,

Kinam Park

LOWE PRICE LEBLANC & BECKER

SUITE 300
99 CANAL CENTER PLAZA
ALEXANDRIA, VIRGINIA 22314

TELEPHONE: 703-684-1111
FACSIMILE: 703-684-1124

PATENT
TRADEMARK
COPYRIGHT
UNFAIR COMPETITION LAW
LITIGATION

SILICON VALLEY, CA
FAIRMONT PLAZA
SUITE 330
50 WEST SAN FERNANDO STREET
SAN JOSE, CALIFORNIA 95113
TELEPHONE: 408-271-2300
FACSIMILE: 408-271-2310

ALLAN M. LOWE*
ROBERT L. PRICE
STEPHEN A. BECKER
ROBERT E. LEBLANC
ISRAEL GOPSTEIN*
BENJAMIN J. HAUPTMAN
KENNETH E. KROSIN
FRANK P. PRESTA
CHARLES D. OSSOLA
GILBERTO M. VILLACORTA*
GENE Z. RUBINSON*
KEITH E. GEORGE
CHRISTOPHER W. BRODY
ARTHUR J. STEINER*
EDWARD J. WISE
ALFRED A. STADNICKI*
DAVID L. STEWART
JOHN A. HANKINS*
BRIAN D. HICKMAN*
TIMOTHY R. DEWITT
IRAH H. DONNER*
JUDITH SAPP*

*BAR MEMBERSHIP OTHER THAN VIRGINIA

DEMETRA J. MILLS
WILLIAM H. BEHA
ERIC J. KRAUS*
LEON R. TURKEVICH*
KAREN C. MAHER*
MICHAEL E. MCCABE, JR.*
ROBERT S. GREEN
GREG P. ROGGIN*
EDWARD A. BECKER*
KENNETH M. BERNER*
JAMES H. MEADOWS*
STEPHEN C. CARLSON
MARCEL K. BINGHAM*
GLENN SNYDER*
THOMAS A. JOLLY*
CARL L. BRANDT*

OF COUNSEL
CHITTARANJAN N. NIRMEL*
HENRY SHUR
IRVING R. PELLMAN*
MICHAEL G. GILMAN
CHRISTOPHER J. PALERMO*

PATENT AGENTS
ALEXANDER V. YAMPOLSKY
KEITH J. TOWNSEND

May 2, 1997

VIA COURIER

214 5673 923

Dr. Kinam Park
Professor of Pharmaceutics
School of Pharmacy
PURDUE UNIVERSITY
West Lafayette, IN 47907-1336
USA

Re: New U. S. Patent Application
For: HYDROGEL COMPOSITES AND SUPERPOROUS HYDROGEL
COMPOSITES HAVING FAST SWELLING, HIGH MECHANICAL
STRENGTH, AND SUPERABSORBANT PROPERTIES
Inventor: Kinam Park et al.
Our Reference: 3178-001

Dear Dr. Park:

Please find enclosed a draft of the above-mentioned patent application which incorporates the changes forwarded with your April 21, 1997 letter. As you will note, this draft reorganizes and revises the claims significantly from the previous draft which you considered. Consistent with our discussions on May 1, 1997, you will note that the claims now are directed to hydrogel composites and superporous hydrogel composites, as well as methods of making these materials.

Please review the draft at your earliest convenience and provide me with your comments. If you should have any further questions, please do not hesitate to contact me.

Very truly yours,

LOWE PRICE LEBLANC & BECKER

JH Meadows
James H. Meadows, Ph.D.

Enclosure

Quick links

WATER STRUCTURE AND BEHAVIOR

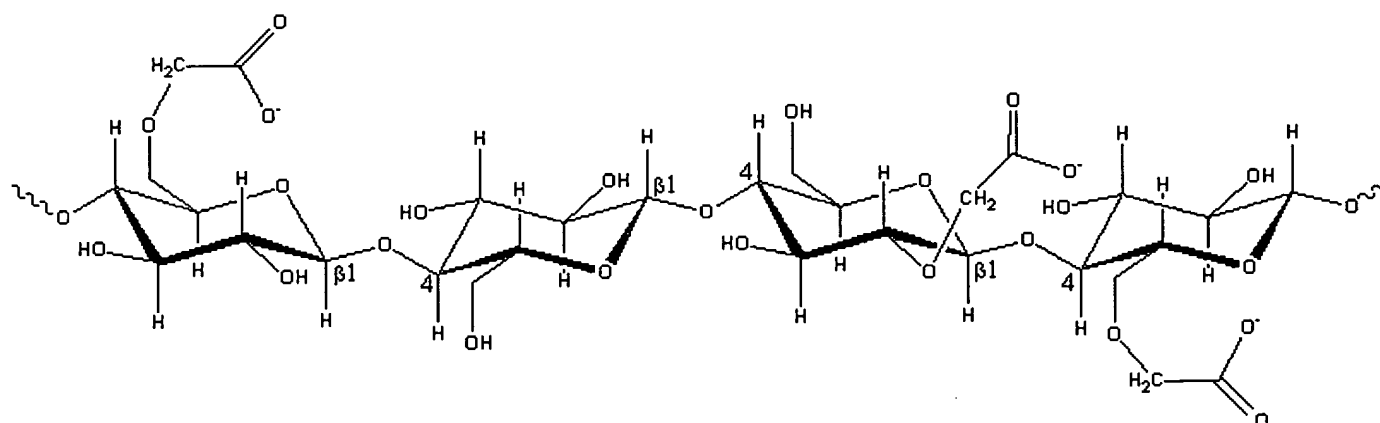
Search

Carboxymethylcellulose (CMC)

Source

Carboxymethylcellulose (CMC; E466) is a derivative of cellulose formed by its reaction with alkali and chloroacetic acid.

Structural unit



The CMC structure is based on the β -(1 \rightarrow 4)-D-glucopyranose polymer of cellulose. Different preparations may have different degrees of substitution, but it is generally in the range 0.6 - 0.95 derivatives per monomer unit.

Molecular structure

CMC molecules are somewhat shorter, on average, than native cellulose with uneven derivatization g areas of high and low substitution. This substitution is mostly 2-O- and 6-O-linked, followed in order importance by 2,6-di-O- then 3-O-, 3,6-di-O-, 2,3-di-O- lastly 2,3,6-tri-O-.linked. It appears that the substitution process is a slightly cooperative (within residues) rather than random process giving slight higher than expected unsubstituted and trisubstituted areas. CMC molecules are most extended (rod-like) at low concentrations but at higher concentrations the molecules overlap and coil up and then, at high concentrations, entangle to become a thermoreversible gel. Increasing ionic strength and reducing pH both decrease the viscosity as they cause the polymer to become more coiled.

Functionality

CMC dissolves rapidly in cold water and mainly used for controlling viscosity without gelling (CMC, at typical concentrations, does not gel even in the presence of calcium ions). As its viscosity drops during heating, it may be used to improve the volume yield during baking by encouraging gas bubble formation. Its control of viscosity allows use as thickener, phase and emulsion stabilizer (*e.g.* with milk casein), and suspending agent. CMC can be also used for its water-holding capacity as this is high even at low viscosity; particularly when used as the Ca^{2+} salt. Thus, it is used for retarding staling and reducing fat uptake into fried foods.

The average chain length and degree of substitution are of great importance; the more-hydrophobic lower substituted CMCs are thixotropic but more-extended higher substituted CMCs are pseudoplastic. At low pH, CMC may form cross-links through lactonization between carboxylic acid and free hydroxyl groups.

The solution properties of a range of commercial CMC's have been investigated [879].

Interactive structures are available (COW [Plug-in, ActiveX], 20 KB; Chime, 5 KB).

Please submit any comments and suggestions you may have.

[Site Index](#) | [Hydrocolloids](#) | [Polysaccharide hydration](#) | [Hydrogen bonding](#)



This page was last updated by Martin Chaplin
on 19 April, 2006